1.0

INTRODUCTION

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1.0 INTRODUCTION

1.1 PROJECT OVERVIEW

This Application for Certification (AFC) is for the construction and operation of a nominal 500 megawatt (MW) combined cycle power plant in Colusa County by Reliant Energy Colusa County, L.L.C. (Reliant). The site is located approximately 4 miles to the west of Interstate 5 (I-5) and approximately 72 miles north of the city of Sacramento. The site is located adjacent to both Pacific Gas and Electric Company (PG&E)'s Cottonwood to Vaca-Dixon transmission corridor, and the Pacific Gas Transmission (PGT)/PG&E gas transmission pipelines (lines 400 and 401). The site locale is a rural, sparsely populated portion of the western Sacramento Valley and is primarily dedicated to farming and grazing agricultural uses. The nearest inhabitant to the proposed project site is approximately 1.7 miles from the site, and there are approximately 12 residences within 2 miles of the project site. The general location of the site is shown on Figure 1.1-1, which also shows the nearby local communities of Maxwell, Williams, and Willows.

The facility, to be known as the Colusa Power Project (CPP), will incorporate two combustion gas turbines that will burn natural gas and a steam turbine driven with steam generated by Heat Recovery Steam Generators (HRSGs). Each combustion gas turbine and the steam turbine will be connected to one of three separate electric generators. Output of the generators will be connected to step-up transformers and then to a new PG&E switchyard.

The CPP will be interconnected to PG&E's northern California transmission grid and power generated by the facility will be available to serve energy needs throughout California.

The project will use air cooling to reduce consumptive water use by over 90 percent and will employ a zero liquid discharge system.

Construction of the project is estimated to cost approximately $320 to $360 million dollars[1] and the CPP is planned to begin commercial operation in the second quarter of 2004 after a 22-month construction period.

1.2 FACILITY DESCRIPTION

Reliant is leasing a 200-acre parcel adjacent to Delevan Road, approximately 4 miles west of I-5. The project, including the new switchyard, will use approximately 27 acres of the site. The total area of the site disturbed during construction will be approximately 62 acres. A view of the project site prior to construction of the CPP is shown on Figure 1.2-1. A simulated aerial view of the completed project showing the major generating facility components is shown on Figure 1.2-2.

The CPP will include two natural gas–fired GE Frame 7-FA combustion gas turbines with electrical generators (CTG). Each will be equipped with dry low nitrogen oxide (DLN) combustors to reduce the formation of NO_X, a regulated air pollutant. The CTGs will each be equipped with evaporative inlet air coolers/filters to enhance turbine performance in hot weather.

Hot exhaust gases from the CTGs will be directed to parallel HRSGs where steam will be generated at three pressures. The steam produced by the HRSGs will be combined to drive a single Steam Turbine. The HRSGs will include duct burners to increase steam output and achieve higher levels of power output in selected modes of operation. They will also include selective catalytic reduction (SCR) emissions control equipment for further reduction of nitrogen oxides (NO_X) and an oxidation catalyst for reduction

[1] Current dollars.

of carbon monoxide (CO) and volatile organic compound (VOC) emissions in the exhaust gas. Cooled exhaust gases from each HRSG will be exhausted to the atmosphere through a stack that will be approximately 150 feet in height.

Steam from the HRGSs will be directed to the multistage steam turbine, then exhausted and condensed in an air-cooled condenser (ACC). Condensate from the ACC is returned to the steam cycle.

Each of the CTGs and the steam turbine are connected to electric generators, which generate electrical energy at 18 kilovolts. The output of each then passes through a step-up transformer where it is increased to 230 kV for transmission. The step-up transformers are interconnected with a new switchyard through a series of circuit breakers which control the delivery of CPP's electrical output to various PG&E transmission circuits.

The CPP will use "dry" cooling technology for its operation and Reliant plans to install a wastewater recovery system to recover all process wastewater for reuse.

The regulated air emissions of the CPP will be offset by emission reduction credits so that there is no net increase in the atmospheric release of criteria pollutants. One potential source of emission offsets is to idle two of the existing combustion turbines in the adjacent PG&E Compressor Station with an electric motor/compressor equipment set. Repowering would be accomplished by construction of this equipment set within the compressor station site, retaining the Frame 3 turbines for only limited service throughout the year. This option would reduce the air emissions of the compressor station and create an air emissions offset. Since this option includes new construction at the PG&E Compressor Station, it has been included as part of this Application for Certification. Reliant has identified additional emission offsets to provide the total offset necessary for regulatory compliance.

Linear facilities include a new 2,500-foot-long natural gas interconnecting pipeline to the existing gas backbone system and a new 2,300-foot-long water supply to deliver water to the site from the Tehama-Colusa Canal.

To allow for transportation of some of the heavier equipment components to the site, a bridge on McDermott Road over Teresa Creek would be replaced, and the eastern side of the Delevan/McDermott intersection would be slightly widened. After construction is completed, local access roads will be repaved or resurfaced as necessary and appropriate.

1.3 PROJECT OPERATIONS

The CPP is designed as a "merchant power plant" and will sell its output in the open market. In its role as a merchant plant the CPP will operate when and for the period of time dictated by market demands and the provisions of bilateral sales. Thus the number of hours of operation and the level of output of the facility cannot be forecast in advance. However, Reliant expects that the CPP, because it incorporates state-of-the-art generation equipment and its combined cycle configuration will be one of the most efficient generation facilities available, will be operated with a capacity factor between 60 percent and 90 percent and have an availability factor of 92 to 96 percent.

The CPP will be able to operate at several different levels of electrical output. At full operation of both CTGs, the plant will be able to increase output by operation of the evaporative air inlet coolers and duct firing. When necessary, the plant will be able to operate at partial load by reducing the operating level of the CTGs or placing one CTG on standby.

1.4 PROJECT SCHEDULE

The Application for Certification for the CPP has been submitted to the California Energy Commission in June 2001 for consideration for a six-month review and certification process. In concert with the six-month review program, Reliant expects to mobilize to begin construction of the CPP immediately upon certification. The project, including offsite infrastructure, will be completed in 22 months and begin commercial operation in the second quarter of 2004.

1.5 PROJECT OWNERSHIP

The CPP, including the generation facility and water pipeline, will be owned by Reliant Energy Colusa County, LLC, a wholly owned subsidiary of Reliant Energy.

The new transmission switchyard and the interconnecting transmission lines will be owned by PG&E. The gas pipeline interconnecting to the PG&E gas transmission system will also be owned by PGT/PG&E.

All road and bridge improvements will be made by Reliant on behalf of Colusa County.

1.6 WATER SUPPLY

The CPP has been designed to operate with the minimum water requirements practicable for the type of generation technology to be employed. Specifically, the project will employ dry cooling technology, which eliminates the large water supply most power generation projects require.

Project water requirements will be supplied under contract with the Glenn-Colusa Irrigation District (GCID). Water purveyed by the District will be transported to the site vicinity via the Tehama-Colusa Canal. It will be delivered to the project site via a new water supply pipeline. Reliant has obtained contract rights to a sufficient quantity of water to supply all project water needs.

1.7 FUEL SUPPLY

The CPP will burn natural gas fuel. Gas purchased from suppliers will be delivered to the project site via a pipeline interconnected to the PGT/PG&E gas transmission lines that runs approximately 2,500 feet to the east of the project site. PG&E will provide a pipeline tap and supply interconnection and a pressure reducing/metering station. The pressure reducing/metering station will be located within the CPP facility. The pipeline tap will be located adjacent to the PG&E Compressor Station.

1.8 TRANSMISSION

The project site is located adjacent to PG&E's Cottonwood to Vaca-Dixon transmission corridor, which includes four 230 kV high voltage transmission circuits. The CPP will be interconnected to all of these circuits to afford maximum flexibility in routing the electrical output of the CPP to different areas of California. Two PGT/PG&E gas transmission lines and the PG&E Compressor Station are also located adjacent to the CPP site and will provide gas supply for plant operations.

A new switchyard will be constructed adjacent to the CPP by PG&E. The existing four Cottonwood to Vaca-Dixon 230 kV transmission circuits will be connected into this new switchyard, which will be operated by PG&E. The new switchyard will include circuit breakers and other switching gear to allow delivery of CPP output to the Cottonwood to Vaca-Dixon lines or to allow the lines to operate independent of the CPP when the CPP is offline for service outages. Initial load flow studies coordinated

with PG&E, California Independent System Operator (Cal-ISO), and CEC staff indicate that no system upgrades will be required.

1.9 PROJECT ENVIRONMENTAL FACTORS

Impacts that the proposed project may have on the environment have been evaluated in detail. The CPP will avoid or minimize potential environmental impacts through project siting and design, and incorporation of mitigation measures. As a result, the CPP will have no significant environmental impacts.

1.9.1 Air Quality

The proposed project will not have a significant adverse impact on air quality and will provide a net air quality benefit. The project will have emissions of criteria pollutants including NO_X, CO, VOCs, sulfur dioxide (SO_2) and particulates less than or equal to 10 microns in diameter (PM_{10}). These emissions will be fully offset by providing emission reductions from other regional emission sources or from local sources. In addition, the facility will incorporate the following state-of-the-art air pollution controls that reflect Best Available Control Technologies (BACT) to reduce emissions:

- Dry low NO_X burner technology and SCR to reduce NO_X emissions to 2 parts per million (ppm) @ 15 percent oxygen (O_2) dry.
- An oxidation catalyst to limit CO emissions to 6 ppm @ 15 percent O_2 dry and VOC emissions to 2.4 ppm @ 15 percent O_2 dry.
- Pipeline-quality natural gas as a primary fuel to limit SO_2 and PM_{10} emissions.

1.9.2 Biological Resources

Biological impacts have been minimized by siting facilities away from sensitive habitats and near required infrastructure. The facility will be located in an existing agricultural area currently used for cattle grazing, located within approximately 1,000 feet of an existing industrial facility. New access roadway requirements will be limited to a 2,500-foot-long extension of the existing access road to this facility. One bridge along the access route will require replacement to accommodate heavy haul construction traffic.

In addition to careful plant siting, the following mitigation measures will eliminate or reduce to a less-than-significant level the potential for impacts during project construction and operation:

- Preconstruction surveys to locate plant and animal species requiring protection, and minimization and/or avoidance of rare plants and protected animals
- Avoidance of construction in Teresa Creek during certain time periods to avoid impacts to migrating fish
- Revegetation of disturbed areas with appropriate native species
- Replacement of lost habitat for Swainson's hawk habitat
- Reconstruction of occupied burrowing owl burrows
- Reduced lighting to prevent bird collisions with plant structures.

1.9.3 Cultural Resources

No previous records of surveys, inventories, or evaluations of cultural resources on the project site were found. Site-specific surveys indicate that there would not likely be impacts to cultural resources.

1.9.4 Land Use

The proposed project is sited adjacent to existing industrial facilities in an unincorporated area of Colusa County designated Agricultural-General (A-G) and zoned Exclusive Agriculture (EA). The CPP is compatible with these industrial facilities and would not impair the productivity of other agricultural land in the site vicinity. The closest resident is approximately 1.7 miles southeast of the site. Reliant has applied to Colusa County for a change in General Plan Land Use Designation and Zoning, and a subdivision of the 200-acre parcel. The application to the county will be processed in conjunction with the CEC's review of this AFC, utilizing the CEC's role as lead agency for the California Environmental Quality Act (CEQA) and its environmental analysis.

1.9.5 Noise

The proposed project has been designed with significant noise control features to meet the stringent requirement of 45 dBA at night at nearby residences. Sound levels would not exceed the 60 L_{dn} criteria at the closest residence, as established by Colusa County.

1.9.6 Public Health

The proposed project will be fueled with clean burning natural gas to minimize potential toxic air emissions. The maximum incremental cancer risk from project emissions was estimated to be less than one in one million. For sensitive receptors, the maximum chronic "total hazard index" (THI) and the maximum acute THI were both estimated to be less than one. Based on this evaluation using conservative assumptions, CPP emissions are expected to pose no significant cancer or non-cancer health effects. As demonstrated by the air quality analysis, criteria pollutant emissions from the CPP will not cause or contribute to violations of federal or state ambient air quality standards, which have been set at levels designed to protect public health. No significant adverse health effects from criteria pollutant emissions are anticipated.

1.9.7 Worker Safety and Health

Worker exposure to physical and chemical hazards will be minimized through adherence to appropriate engineering design criteria, implementation of appropriate safety and administrative procedures, use of personal protective equipment, and compliance with applicable health and safety regulations.

1.9.8 Socioeconomics

The proposed project will have a positive impact on fiscal resources in the county and in the region. The estimated property tax that will accrue to the county will be approximately $3.2 to $3.6 million per year.[2] Construction will occur over a 22-month period, and total construction costs are estimated to range between approximately $123 million and $139 million for payroll and $210 million for materials, supplies and equipment.

Construction workers would temporarily increase the nearby population, increasing the demand for services, particularly lodging. This temporary influx is not expected to place demands on the local lodging industry that cannot be met. The construction and operation of the CPP would not have a

[2] This is an estimated number and is subject to asset depreciation.

significant adverse impact on law enforcement, fire, emergency, medical, utility, or educational services. The project would not create a disproportionate impact on any low income or socioeconomic population.

1.9.9 Agriculture and Soils

The proposed project will convert approximately 200 acres from cattle grazing to an industrial use. This is a loss of approximately 0.1 percent of Colusa County's grazing lands. These lands are not rated as prime farmland, nor are they enrolled in any Williamson Act or Farmland Security Zone contracts. The construction and operation of the plant will not adversely affect the agricultural productivity of surrounding agricultural lands.

The erosion characteristics of the types on the project site range from slight to moderate. With Best Management Practices incorporated into the project, impacts from soil erosion would be less than significant

1.9.10 Traffic and Transportation

Access to the project site is from I-5 via the Delevan Road interchange. Local roadways that provide access include Delevan Road, McDermott Road, and Dirks Road. These local roads are estimated to carry 348, 168, and less than 168 vehicles per day, respectively. All local access roads currently operate at Level of Service A. Construction traffic will average 221 daily round trips during the 22-month construction schedule. During the peak construction month 441 peak daily round trips are anticipated. These additional trips will result in a Level of Service B on the local access roads, which will be a noticeable but less-than-significant impact. A bridge over Teresa Creek on McDermott Road will be reconstructed as part of the project.

During plant operations, a total of 25 one-way peak daily trips are anticipated. This would not change the existing Level of Service on local access roads and would be a less-than-significant impact.

1.9.11 Visual Resources

Although the proposed project is sited nearby existing industrial uses (PG&E Compressor Station, 230 kV transmission lines), the plant will be visible from unblocked surrounding views within an approximately 5-mile radius to the north, east, and south. Existing industrial features and the topographic backdrop result locally in open views to the plant, which reduce the visual impact. Project features designed to reduce visual impacts include color chosen to blend with the natural setting, use of non-reflective materials, shielded and controlled lighting using high-pressure sodium vapor fixtures, and revegetation of disturbed areas after construction. These impacts would be less than significant.

1.9.12 Hazardous Materials Handling

Minimal storage of hazardous materials will occur onsite. Hazardous materials include aqueous ammonia for the SCR system, various water additives and water treatment chemicals including acids and caustics, various cleaning chemicals, and hydrogen (in maximum quantities of 24,000 standard cubic feet) for generator cooling. Equipment and containers will be located inside containment berms, and incompatible materials will be stored in separate containment areas. Areas susceptible to potential leaks or spills will be paved and bermed. Piping and tanks will be protected from potential traffic hazards by concrete and/or steel barriers. The CPP will implement accident prevention and mitigation measures to reduce the risk associated with the use and storage of hazardous materials.

1.9.13 Waste Management

Wastes generated by the CPP during construction and operation of the facility will be recycled to the extent practicable. Wastes include non-hazardous solid and liquid wastes (e.g., scrap metal and sanitary waste) as well as hazardous solid and liquid wastes (e.g., spent SCR and oxidation catalyst and waste lubrication oil). Appropriate procedures and personnel training will provide assurance that non-hazardous and hazardous wastes are properly handled and do not significantly affect the environment or health and safety.

Disposal of non-hazardous waste from the plant will not significantly impact the capacity of the Class II and III waste disposal facilities identified as available for use by the project. Similarly, hazardous waste generation and disposal from the CPP will be minimized by recycling and will not significantly impact the capacity of Class I hazardous waste disposal facilities identified as available for use by the project.

1.9.14 Water Resources

The CPP is proposed as a "dry-cooled" facility. This is an environmentally friendly technology that reduces water demand for power plants by several thousand acre-feet per year. Water will be supplied through a local provider, the Glenn-Colusa Irrigation District, wheeled to the Tehama-Colusa Canal, then extracted and conveyed to the site. Average water use during construction is estimated at 8,000 gallons per day. When operational, water use at the plant will not exceed 300 acre-feet per year.

Project features designed to be protective of water quality include the zero liquid discharge system, which will eliminate offsite disposal of process wastewater, a sedimentation/detention basin to collect and manage storm water runoff from the project site, and secondary spill containment around chemical delivery and storage areas, diesel fuel tanks and transformers. The site is not located in a floodplain. Impacts to water resources would be less than significant.

1.9.15 Geologic Hazards and Resources

No significant geological or soil-related impacts are anticipated from the construction or operation of the proposed plant. Final foundation design will incorporate mitigation measures designed to reduce impacts from moderate earthquake motions or expansive soils.

1.9.16 Paleontological Resources

Literature and archival reviews, as well as pedestrian surveys, did not provide evidence that any paleontological resources would be impacted by the construction or operation of the CPP.

1.10 PROJECT ALTERNATIVES

As part of its project development process, Reliant assessed a number of project alternatives. Alternative project size/facility configuration was evaluated in the context of the merchant generating facility market and the nominal plant size of 500 MW was selected. Other alternatives evaluated by Reliant included:

- Sites within the 4,800-acre Holthouse Ranch.
- Site layouts within the 200-acre location on the Holthouse Ranch.
- Locations within the Colusa County industrial corridor and incorporated areas within the county.

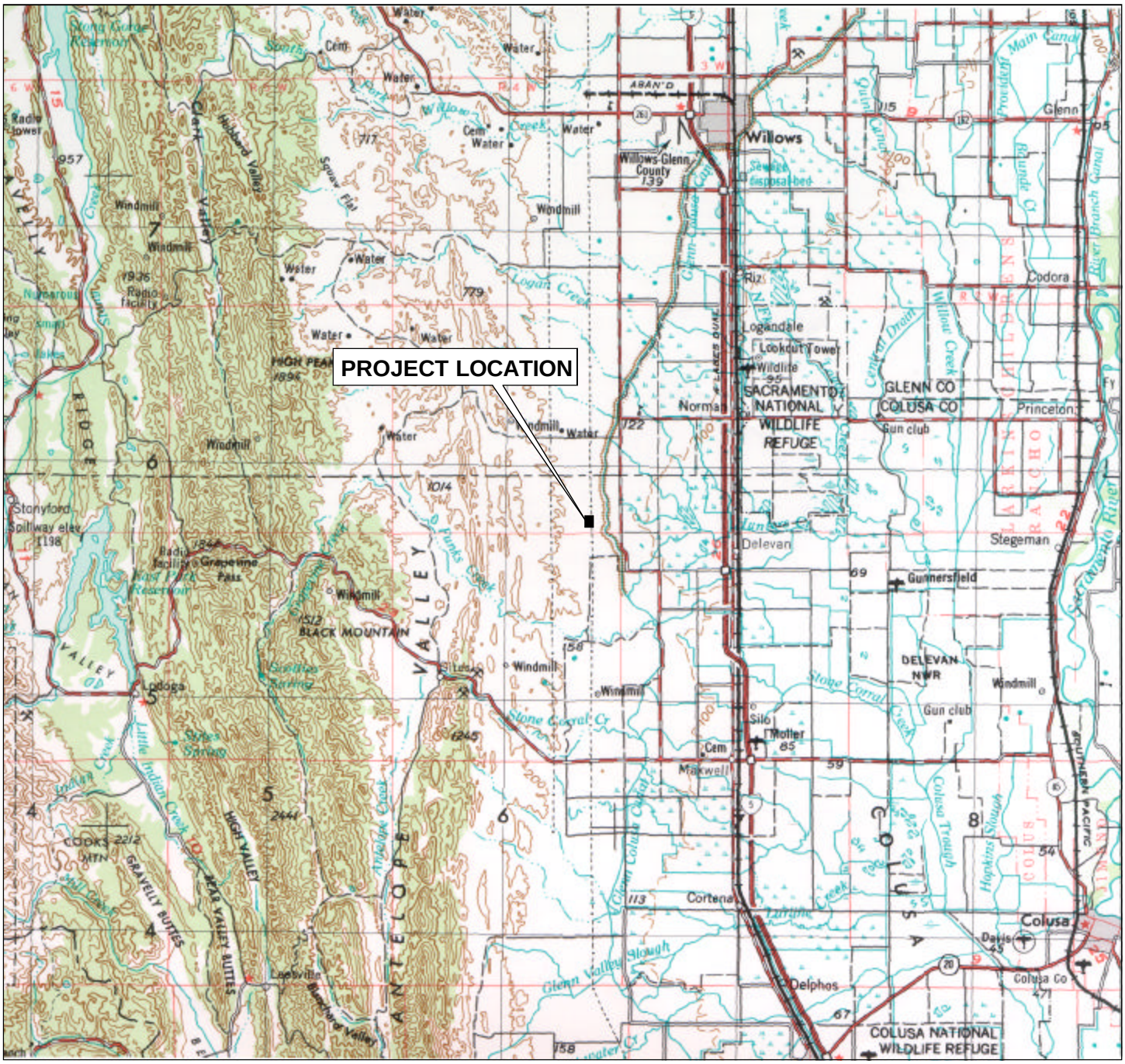
- Generation Technology – technology alternatives to combustion gas turbines were reviewed.

- Transmission Interconnection – interconnection at nearby substations and the California Oregon Transmission Project transmission line instead of interconnection with the PG&E Cottonwood to Vaca-Dixon transmission line.

- Water Supply/Cooling Technology – A number of alternative water supplies including surface and groundwater sources were evaluated. This evaluation was made against the varying water quantities that wet versus dry cooling technologies would require.

- No Project Alternative – As required by the California Energy Commission's project environmental review process[3] the No Project alternative was also evaluated by Reliant.

[3] The CEC process is a California Environmental Quality Act (CEQA) equivalent process.



Source:
USGS Topographic-Bathymetric Series
Ukiah, California, 1979

N

0 5 10

Scale in Miles
1:250,000

SITE VICINITY MAP

Colusa Power Plant
Reliant Energy
43-00066841.00 Colusa County, California

URS

FIGURE 1.1-1

5/16/01 vsa ..\46800-930\svm.cdr

VIEW OF THE PROJECT SITE

Colusa Power Plant
Reliant Energy
43-00066841.00 Colusa County, California

URS

FIGURE 1.2-1

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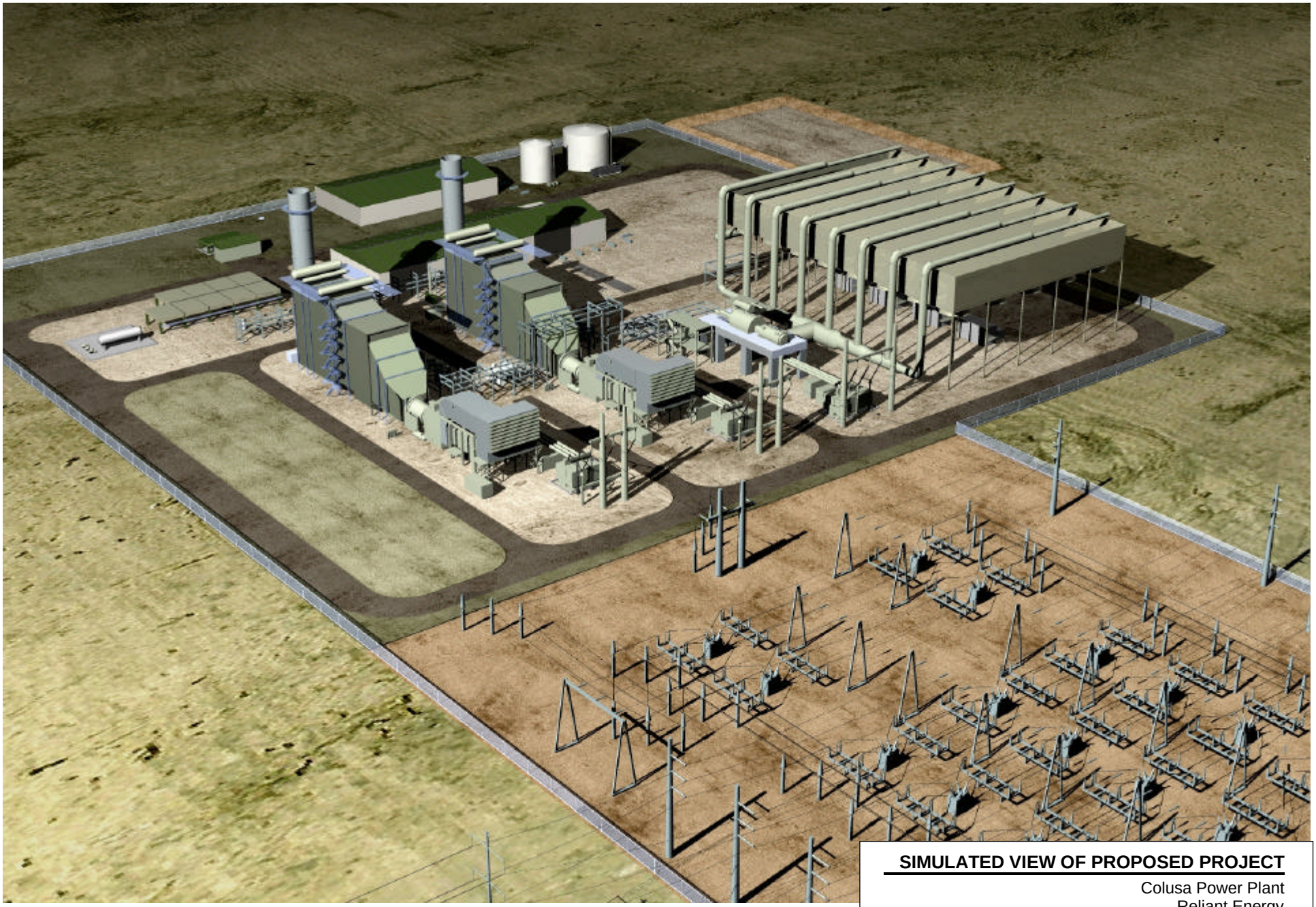

Source:
Duke/Fluor Daniel, 5/24/01

SIMULATED VIEW OF PROPOSED PROJECT

Colusa Power Plant
Reliant Energy
Colusa County, California

43-00066841.00

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FIGURE 1.2-2

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